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Official Gazette of the United States Patent and Trademark Office - United States. Patent and Trademark Office 2001

Handbook of Industrial Hydrocarbon Processes - James G. Speight 2010-12-24
Written by an author with over 38 years of

experience in the chemical and petrochemical process industry, this handbook will present an analysis of the process steps used to produce industrial hydrocarbons from various raw materials. It is the first book to offer a thorough analysis of external factors effecting production such as: cost, availability and environmental

legislation. An A-Z list of raw materials and their properties are presented along with a commentary regarding their cost and availability. Specific processing operations described in the book include: distillation, thermal cracking and coking, catalytic methods, hydroprocesses, thermal and catalytic reforming, isomerization, alkylation processes, polymerization processes, solvent processes, water removal, fractionation and acid gas removal. Flow diagrams and descriptions of more than 250 leading-edge process technologies An analysis of chemical reactions and process steps that are required to produce chemicals from various raw materials Properties, availability and environmental impact of various raw materials used in hydrocarbon processing
Sulphuric Acid Extraction Methods for Determining Olefins and Aromatics in Hydrocarbon Oils - Optimum Conditions and Concentrations of Acid - C. H. Fisher 1937

Encyclopedia of Chemical Processing and Design - John J. McKetta Jr 1989-11-27

"Written by engineers for engineers (with over 150 International Editorial Advisory Board members), this highly lauded resource provides up-to-the-minute information on the chemical processes, methods, practices, products, and standards in the chemical, and related, industries. "

Air Pollution Control - United States. Congress. Senate. Committee on Public Works. Subcommittee on Air and Water Pollution 1965

Practical Advances in Petroleum Processing - Chang Samuel Hsu 2007-01-10

Includes topics not found together in books on petroleum processing: economics, automation, process modeling, online optimization, safety, environmental protection Combines overviews of petroleum composition, refinery processes, process automation, and environmental protection with comprehensive chapters on

recent advances in hydroprocessing, FCC, lubricants, hydrogen management Gives diverse perspectives, both geographic and topical, because contributors include experts from eight different countries in North America, Europe and Asia, representing oil companies, universities, catalyst vendors, process licensors, consultants and engineering contractors

Official Gazette of the United States Patent Office - United States. Patent Office 1971-07

Alkenes - Reza Davarnejad 2021-11-03

Alkenes, which have carbon-carbon double bonds, are chemicals and energy sources that play an important role in human life, including economics and the environment. This book examines the production and synthesis of alkenes, olefins, and polyolefins, as well as environmental issues faced during industrial production of these hydrocarbons. It also discusses eco-friendly and green separation techniques.

Chemistry of Petrochemical Processes - Sami Matar, Ph.D. 2001-07-26

In Chemistry of Petrochemical Processes, readers find a handy and valuable source of information containing insights into petrochemical reactions and products, process technology, and polymer synthesis. The book reviews and describes the reactions and processes involved in transforming petroleum-based hydrocarbons into the chemicals that form the basis of the multi-billion dollar petrochemical industry. In addition, the book includes information on new process developments for the production of raw materials and intermediates for petrochemicals that have surfaced since the book's first edition. Provides a quick understanding of the chemical reactions associated with oil and gas processing Contains insights into petrochemical reactions and products, process technology, and polymer synthesis

Conversion of Petroleum - Alexander Nicholas

Sachanen 1948

Gasoline and Other Motor Fuels - Carleton Ellis
1921

Catalytic Naphtha Reforming, Revised and Expanded - George J. Antos 2004-02-23

Catalytic Naphtha Reforming, Second Edition presents modern, crystal-clear explanations of every aspect of this critical process for generating high-octane reformate products for gasoline blending and production of benzene, toluene, and xylene (BTX) aromatics. The book details the chemistry of naphtha reforming, the preparation and characterization

Sustainable Strategies for the Upgrading of Natural Gas: Fundamentals, Challenges, and Opportunities - E.G. Derouane 2006-03-30

Energy and feedstock materials for the chemical industry are in increasing demand and, with constraints related to the availability and use of oil, the energy and chemical industry is

undergoing considerable changes. In recent years, major restructuring has occurred in the oil, petrochemical, and chemical industry, with increasing attention devoted to the use of natural gas, methane in particular, as a chemical feedstock rather than just as a fuel. The conversion of remote natural gas into liquid fuels or other transportable chemicals is a challenge to industrial catalysis. Few processes exist so far with the major ones involving the conversion of natural gas to synthesis gas by steam reforming, CO₂ reforming, or partial oxidation, followed by the syntheses of methanol, hydrocarbons (Fischer-Tropsch synthesis), or ammonia. In this book, a comprehensive overview of the field of processing natural gas is given, through a series of chapters written by leading scientists and engineers in the field. New developments are discussed and current work relevant to the area is shown by a series of recent works by researchers working in this and related fields.

Handbook of Petroleum Refining - James G.

Speight 2016-10-26

Petroleum refining involves refining crude petroleum as well as producing raw materials for the petrochemical industry. This book covers current refinery processes and process-types that are likely to come on-stream during the next three to five decades. The book includes (1) comparisons of conventional feedstocks with heavy oil, tar sand bitumen, and bio-feedstocks; (2) properties and refinability of the various feedstocks; (3) thermal processes versus hydroprocesses; and (4) the influence of refining on the environment.

Chemmotological Aspects of Sustainable Development of Transport - Sergii Boichenko

2022-10-03

This book looks at chemmotological solutions to important questions surrounding sustainability and environmental safety of transport — both key priorities within the global strategy of sustainable development. Bringing together expanded versions of selected papers presented

at the 8th International Scientific-Technical Conference: Problems of Chemmotology - Theory and Practice of Rational Use of Conventional and Alternative Fuels and Lubricants, contributors present solutions to problematic questions, including choosing feedstock and technologies of its processing for manufacturing alternative fuels, development and implementation of measures for improving environmental safety of transport, minimizing exhaust gases emission from transport, introducing new solution or improvements in systems of fuels supply and infrastructure, and changes in legislative and regulatory base for fuels and lubricants use. This collection will be an invaluable reference for researchers, professionals, and students involved in alternative aviation fuels, transport engineering, sustainable transport development, and fuels and lubricants.

Advanced Combustion Science - Tsuneo Someya
2012-12-06

Non-uniform combustion, as encountered in diesel and gas turbine engines, furnaces, and boilers, is responsible for the conversion of fossil fuel to energy and also for the corresponding formation of pollutants. In spite of great research efforts in the past, the mechanism of non-uniform combustion has remained less explored than that of other combustion types, since it consists of many, mostly transient processes which influence each other. In view of this background, a group research project, "Exploration of Combustion Mechanism", was established to explore the mechanism of combustion, especially that of diffusive combustion, and also to find efficient ways to control the combustion process for better utilization of fuel and the reduction of pollutant emission. The group research was started, after preparatory activity of 2 years, in April 1988, for a period of 3 years, as a project with a Grant-in-Aid for Scientific Research of Priority Area subsidized by the Ministry of Education, Science

and Culture of Japan. The entire group of 43 members was set up as an organizing committee of 13 members, and five research groups, consisting of 36 members. The research groups were: (1) Steady combustion, (2) Unsteady spray combustion, (3) Control of combustion, (4) Chemistry of combustion, and (5) Effects of fuels. At the beginning of the project it was agreed that we should pursue the mechanism of combustion from a scientific viewpoint, namely, the target of the project was to obtain the fundamentals, or "know why", rather than "know how" of combustion.

Air and Water Pollution Annual Report - National Measurement Laboratory (U.S.) 1966

Oligomerization of Chemical and Biological Compounds - Claire Lesieur 2014-06-18

Many thanks to the authors for high quality chapters and to the referees for helping improve the manuscripts. The book is interdisciplinary, it covers fields from organic chemistry to

mathematics, and raises different aspects of oligomerization. It is a great source of information as every chapter introduces general knowledge and deep details. Mixing communities is to instigate novel ideas and hopefully help looking at oligomerization with new eyes.

Produced Water - Kenneth Lee 2011-09-18

A state-of-the-art review of scientific knowledge on the environmental risk of ocean discharge of produced water and advances in mitigation technologies. In offshore oil and gas operations, produced water (the water produced with oil or gas from a well) accounts for the largest waste stream (in terms of volume discharged). Its discharge is continuous during oil and gas production and typically increases in volume over the lifetime of an offshore production platform. Produced water discharge as waste into the ocean has become an environmental concern because of its potential contaminant content. Environmental risk assessments of

ocean discharge of produced water have yielded different results. For example, several laboratory and field studies have shown that significant acute toxic effects cannot be detected beyond the "point of discharge" due to rapid dilution in the receiving waters. However, there is some preliminary evidence of chronic sub-lethal impacts in biota associated with the discharge of produced water from oil and gas fields within the North Sea. As the composition and concentration of potential produced water contaminants may vary from one geologic formation to another, this conference also highlights the results of recent studies in Atlantic Canada.

Handbook of Petrochemical Processes - James G. Speight 2019-06-13

The petrochemical industry is a scientific and engineering field that encompasses the production of a wide range of chemicals and polymers. The purpose of this book is not only to provide a follow-on to form the later chapters of

the highly successful Chemistry and Technology of Petroleum 5th Edition but also provides a simplified approach to a very diverse chemical subject dealing with the chemistry and technology of various petroleum and petrochemical process. Following from the introductory chapters, this book provides the readers with a valuable source of information containing insights into petrochemical reactions and products, process technology, and polymer synthesis. Provides readers with a valuable source of information containing insights into petrochemical reactions and products, process technology, and polymer synthesis Introduces the reader to the various petrochemical intermediates are generally produced by chemical conversion of primary petrochemicals to form more complicated derivative products The reactions and processes involved in transforming petroleum-based hydrocarbons into the chemicals that form the basis of the multi-billion dollar petrochemical industry are

reviewed and described The book includes information on new process developments for the production of raw materials and intermediates for petrochemicals Includes a description of the origin of the raw materials for the petrochemicals industry - including an overview of the coal chemicals industry Mono-Olefins - F. Asinger 2013-10-22 Mono-Olefins: Chemistry and Technology is a translation from the German and deals with the study of olefins from low ethylene to hexenes and olefins from the high hexenes to eicosenes. The book describes the gaseous or low-boiling olefins and the higher, normally liquid olefins (which have only a minor role in applications in the chemical industry). The olefins are considered important as they are added in the distillation of off-gases in refineries. Although the liquid olefins are used sparingly, these are needed to manufacture lubricants, synthetic detergents, and the higher aliphatic alcohols. The book then explains the three processes used

to separate olefin containing mixtures of gases into fractions by the C-number or to convert olefins in the pure state: distillation, absorption, and adsorption. The author then describes the processes in manufacturing carburetor fuel from petroleum and natural gases. Petroleum oil is a mixture of paraffinic, naphthenic, and aromatic hydrocarbons and has no olefins. The text describes the complete process of refining petroleum into different products such as gasoline, kerosene, lubricants, and spotting benzenes. Then the book explains the polymerization of olefins to produce carburetor fuels either by the thermal method or catalytic method. The text notes some research made into double-bond isomerization in mono-olefins and their possible applications. This book is beneficial to industrial chemists, researchers, technical designers, and engineers whose works are related with oil refinery and fossil fuels. *Chemical Catalysts for Biomass Upgrading* - Mark Crocker 2019-11-19

A comprehensive reference to the use of innovative catalysts and processes to turn biomass into value-added chemicals *Chemical Catalysts for Biomass Upgrading* offers detailed descriptions of catalysts and catalytic processes employed in the synthesis of chemicals and fuels from the most abundant and important biomass types. The contributors' noted experts on the topic' focus on the application of catalysts to the pyrolysis of whole biomass and to the upgrading of bio-oils. The authors discuss catalytic approaches to the processing of biomass-derived oxygenates, as exemplified by sugars, via reactions such as reforming, hydrogenation, oxidation, and condensation reactions. Additionally, the book provides an overview of catalysts for lignin valorization via oxidative and reductive methods and considers the conversion of fats and oils to fuels and terminal olefins by means of esterification/transesterification, hydrodeoxygenation, and decarboxylation/decarbonylation processes. The

authors also provide an overview of conversion processes based on terpenes and chitin, two emerging feedstocks with a rich chemistry, and summarize some of the emerging trends in the field. This important book: -Provides a comprehensive review of innovative catalysts, catalytic processes, and catalyst design -Offers a guide to one of the most promising ways to find useful alternatives for fossil fuel resources - Includes information on the most abundant and important types of biomass feedstocks - Examines fields such as catalytic cracking, pyrolysis, depolymerization, and many more Written for catalytic chemists, process engineers, environmental chemists, bioengineers, organic chemists, and polymer chemists, *Chemical Catalysts for Biomass Upgrading* presents deep insights on the most important aspects of biomass upgrading and their various types.

Handbook of Alternative Fuel Technologies - Sunggyu Lee 2007-03-23

In addition to enabling a clean and energy efficient future, alternative fuel sources are fast becoming a necessity for meeting today's growing demands for low-cost and convenient energy. The *Handbook of Alternative Fuel Technologies* offers a thorough guide to the science and available technologies for developing alternatives to petroleum fuel sources. *Oil in the Sea III* - National Research Council 2003-03-14

Since the early 1970s, experts have recognized that petroleum pollutants were being discharged in marine waters worldwide, from oil spills, vessel operations, and land-based sources. Public attention to oil spills has forced improvements. Still, a considerable amount of oil is discharged yearly into sensitive coastal environments. *Oil in the Sea* provides the best available estimate of oil pollutant discharge into marine waters, including an evaluation of the methods for assessing petroleum load and a discussion about the concerns these loads

represent. Featuring close-up looks at the Exxon Valdez spill and other notable events, the book identifies important research questions and makes recommendations for better analysis of—and more effective measures against—pollutant discharge. The book discusses: Input—where the discharges come from, including the role of two-stroke engines used on recreational craft. Behavior or fate—how oil is affected by processes such as evaporation as it moves through the marine environment. Effects—what we know about the effects of petroleum hydrocarbons on marine organisms and ecosystems. Providing a needed update on a problem of international importance, this book will be of interest to energy policy makers, industry officials and managers, engineers and researchers, and advocates for the marine environment.

The Changing Landscape of Hydrocarbon Feedstocks for Chemical Production - National Academies of Sciences, Engineering, and

Medicine 2016-12-10

A decade ago, the U.S. chemical industry was in decline. Of the more than 40 chemical manufacturing plants being built worldwide in the mid-2000s with more than \$1 billion in capitalization, none were under construction in the United States. Today, as a result of abundant domestic supplies of affordable natural gas and natural gas liquids resulting from the dramatic rise in shale gas production, the U.S. chemical industry has gone from the world's highest-cost producer in 2005 to among the lowest-cost producers today. The low cost and increased supply of natural gas and natural gas liquids provides an opportunity to discover and develop new catalysts and processes to enable the direct conversion of natural gas and natural gas liquids into value-added chemicals with a lower carbon footprint. The economic implications of developing advanced technologies to utilize and process natural gas and natural gas liquids for chemical production could be significant, as

commodity, intermediate, and fine chemicals represent a higher-economic-value use of shale gas compared with its use as a fuel. To better understand the opportunities for catalysis research in an era of shifting feedstocks for chemical production and to identify the gaps in the current research portfolio, the National Academies of Sciences, Engineering, and Medicine conducted an interactive, multidisciplinary workshop in March 2016. The goal of this workshop was to identify advances in catalysis that can enable the United States to fully realize the potential of the shale gas revolution for the U.S. chemical industry and, as a result, to help target the efforts of U.S. researchers and funding agencies on those areas of science and technology development that are most critical to achieving these advances. This publication summarizes the presentations and discussions from the workshop.

Current Developments in Biotechnology and Bioengineering - Rupam Kataki 2020-07-08

Current Developments in Biotechnology and Bioengineering: Sustainable Bioresources for the Emerging Bioeconomy outlines recent advances in bioenergy, biorefinery and the bioeconomy, an essential element for a 21st century bio-based society. The book provides information on biomass and various conversion technologies with different parameters that affect the conversion process. Sections cover different bioproducts, biorefinery systems, energy and greenhouse gas emission balances of bioenergy and biorefinery, and environmental and economic footprints of bioeconomy. Finally, different strategies adopted by developed and developing countries for the promotion and implementation of a bioeconomy concept for a bio-based society are systematically covered. The book provides comprehensive information starting from early progress to the latest trends on bioenergy, biorefinery and bioeconomy with special reference to the developed and the developing countries and the linkage between

bioeconomy and climate change mitigation in simple scientific language to appeal to a wider audience. Includes the fundamentals and concepts of biomass and bioenergy Outlines recent technology development for biomass conversion Provides concept for different bioproducts Covers global strategies and policies on the development of bioeconomies

Zeolites in Industrial Separation and

Catalysis - Santi Kulprathipanja 2010-01-26

This first book to offer a practical overview of zeolites and their commercial applications provides a practical examination of zeolites in three capacities. Edited by a globally recognized and acclaimed leader in the field with contributions from major industry experts, this handbook and ready reference introduces such novel separators as zeolite membranes and mixed matrix membranes. The first part of the book discusses the history and chemistry of zeolites, while the second section focuses on separation processes. The third and final section

treats zeolites in the field of catalysis. The three sections are unified by an examination of how the unique properties of zeolites allow them to function in different capacities as an adsorbent, a membrane and as a catalyst, while also discussing their impact within the industry.

Produced Water 2 - Mark Reed 2012-12-06

This volume constitutes the proceedings of the Produced Water Seminar held in Trondheim, Norway, in September 1995. Hosted by Statoil Research and Development and IKU Petroleum Research, the seminar was an update of the 1992 seminar of the same title held in San Diego, California (Ray and Engelhardt, 1992). Produced water remains the largest volume waste stream from oil and gas production offshore. In the North and Norwegian Seas, produced water volumes are projected to increase significantly over the coming decades, as oil reservoirs near depletion. These releases are therefore the focus of continuing environmental concern. The purpose of this

seminar was to provide a forum for scientists, legislators, and industrial and environmental representatives to share recent information and research results, and to encourage cooperative pursuit of solutions in the future. The success of the seminar, and the quality of this volume, are due in large part to the many authors from around the world who presented almost 50 posters and papers focused on environmental issues and mitigation technologies. In addition, we wish to acknowledge the contributions of the local and international organizing committees. Local Committee Asbjørg Overli and Heidi Torp, Statoil Egil Wanvik and Laila S. Olden, IKU Petroleum Research International Committee James P. Ray, Shell Chemical and Petroleum Products Companies Alexis E. Steen, American Petroleum Institute Theodor C. Sauer, Battelle Ocean Sciences Steven A. Flynn, British Petroleum Martin C. Th. Scholten, TNO Kjell Lohne, Statoil Ingvild Martinsen, Norwegian Pollution Control Authority.

Modern Petrochemical Technology - Santi Kulprathipanja 2021-03-30

Modern Petrochemical Technology A text that explores the essence of petrochemicals and petrochemical technology Modern Petrochemical Technology: Methods, Manufacturing and Applications is a comprehensive resource that provides an overview of the uses for common petrochemical building blocks, a review of the marketplaces, and offers a survey of the technology used to make the key petrochemical building blocks. The book contains both critical information the technologies used to produce petrochemicals, how the various petrochemicals are applied in industry, and provides illustrative examples and problems designed to reinforce the learning about the basic science, engineering, and use of petrochemicals. The book explores three separate petrochemical building block—olefin complexes, aromatic complexes and synthesis gas complexes—and examines the “interconnected” nature of these

building blocks. The authors also include information on the olefins productions using steam cracking, paraffin dehydrogenation, and methanol to olefins technologies and describes various methods, commercial processes to produce aromatics such as benzene, toluene and xylene, and much more. This important book: Offers a guide to the critical information on petrochemical producing technologies Includes material on various petrochemicals from the industrial point-of-view Explores the separation processes, membrane technology, absorption technology, liquid-liquid extraction, and more Contains material from a team of noted experts Provides a survey of examples of commercialization applications of petrochemicals Written for chemical engineers, chemists in industry, membrane scientists, and process engineers, Modern Petrochemical Technology provides an overview of markets and uses for common petrochemical building blocks as well as includes a survey of the technology

used to make the key petrochemical building blocks.

Novel Production Methods for Ethylene, Light Hydrocarbons, and Aromatics - Lyle Albright 1991-09-25

Toxicological Profile for Polycyclic Aromatic Hydrocarbons - 1995

Information Circular - 1946

Heterogeneous Catalysis for Sustainable Energy - Landong Li 2022-05-03

Heterogeneous Catalysis for Sustainable Energy Explore the state-of-the-art in heterogeneous catalysis In *Heterogeneous Catalysis for Sustainable Energy*, a team of distinguished researchers delivers a comprehensive and cutting-edge treatment of recent advancements in energy-related catalytic reactions and processes in the field of heterogeneous catalysis. The book includes extensive coverage of the

hydrogen economy, methane activation, methanol-to-hydrocarbons, carbon dioxide conversion, and biomass conversion. The authors explore different aspects of the technology, like reaction mechanisms, catalyst synthesis, and the commercial status of the reactions. The book also includes: A thorough introduction to the hydrogen economy, including hydrogen production, the reforming of oxygen-containing chemicals, and advances in Fischer-Tropsch Synthesis Comprehensive explorations of methane activation, including steam and dry reforming of methane and methane activation over zeolite catalysts Practical discussions of alkane activation, including cracking of hydrocarbons to light olefins and catalytic dehydrogenation of light alkanes In-depth examinations of zeolite catalysis and carbon dioxide as C1 building block Perfect for catalytic, physical, and surface chemists, Heterogeneous Catalysis for Sustainable Energy also belongs in the libraries of materials

scientists with an interest in energy-related reactions and processes in the field of heterogeneous catalysis.

Hydrocarbon Processing & Petroleum Refiner - 1956-07

Organic Geochemistry - Geoffrey Eglinton
2013-11-11

For many years, the subject matter encompassed by the title of this book was largely limited to those who were interested in the two most economically important organic materials found buried in the Earth, namely, coal and petroleum. The point of view of any discussions which might occur, either in scientific meetings or in books that have been written, was, therefore, dominated largely by these interests. A great change has occurred in the last decade. This change had as its prime mover our growing knowledge of the molecular architecture of biological systems which, in turn, gave rise to a more legitimate asking of the question: "How did

life come to be on the surface of the Earth?" A second motivation arose when the possibilities for the exploration of planets other than the Earth-the moon, Mars, and other parts of the solar system-became a reality. Thus the question of the possible existence of life elsewhere than on Earth conceivably could be answered.

Kinetic Models of Catalytic Reactions - G.S. Yablonskii 1991-04-17

This book has been written by a group of mathematicians and chemists whose common interest is in the complex dynamics of catalytic reactions. Based on developments in mathematical chemistry, a general theory is described that allows the investigation of the relationships between the kinetic characteristics of complex reactions and their detailed reaction mechanism. Furthermore, a comprehensive analysis is made of some typical mechanism of catalytic reactions, in particular for the oxidation of carbon monoxide on platinum metals. In fact, the book presents three kinetics: (a) detailed,

oriented to the elucidation of a detailed reaction mechanism according to its kinetic laws; (b) applied, with the aim of obtaining kinetic relationships for the further design of chemical reactors; and (c) mathematical kinetics whose purpose is the analysis of mathematical models for heterogeneous catalytic reactions taking place under steady- or unsteady-state conditions.

Production of Biofuels and Chemicals with Pyrolysis - Zhen Fang 2020-10-27

This book presents a collection of studies on state-of-art techniques for converting biomass to chemical products by means of pyrolysis, which are widely applicable to the valorization of biomass. In addition to discussing the fundamentals and mechanisms for producing bio-oils, chemicals, gases and biochar using pyrolysis, it outlines key reaction parameters and reactor configurations for various types of biomass. Written by leading experts and providing a broad range of perspectives on cutting-edge applications, the book is a

comprehensive reference guide for academic researchers and industrial engineers in the fields of natural renewable materials, biorefinery of lignocellulose, biofuels, and environmental engineering, and a valuable resource for university students in the fields of chemical engineering, material science and environmental engineering.

Review of Fischer-Tropsch and Related Processes for Synthetic Liquid Fuel Production - Norma R. Golumbic 1946

Industrial Aromatic Chemistry - Heinz-Gerhard Franck 2012-12-06

Aromatic organic hydrocarbons and heterocycles represent a bulk of about one third of all industrially produced organic basic materials. Aromatic compounds such as benzene, phenol, naphthalene, anthracene, and their homologues, are derived from raw materials, coal, crude oil and biogenic resources by thermal and catalytic refining processes. This book introduces the

chemistry of aromatics with a brief discussion of the aromatic character and a survey of historical aspects, particularly the development of the organic dye industry during the 19th century. The main emphasis of the book is to give a clear prospect of industrial processes for the production and the derivatisation of aromatics with consistent flow diagrams. Economical aspects of by- and side-products are especially regarded. For the most important aromatics an analysis of the international market included their derivatives: polymers, pesticides, dyes, pigments and drugs. Professional scientists, managers and students in chemistry and chemical engineering will find a wealth of information for their career and daily work.

Industrial and Process Furnaces - Barrie Jenkins 2013-10-23

Furnaces sit at the core of all branches of manufacture and industry, so it is vital that these are designed and operated safely and efficiently. This reference provides all of the

furnace theory needed to ensure that this can be executed successfully on an industrial scale. *Industrial and Process Furnaces: Principles*, 2nd Edition provides comprehensive coverage of all aspects of furnace operation and design, including topics essential for process engineers and operators to better understand furnaces. This includes: the combustion process and its control, furnace fuels, efficiency, burner design and selection, aerodynamics, heat release profiles, furnace atmosphere, safety and emissions. These elements and more are brought together to illustrate how to achieve optimum

design and operation, with real-world case studies to showcase their application. Up-to-date and comprehensive reference encompassing not only best practice of operation but the essential elements of furnace theory and design, essential to anyone working with furnaces, ovens and combustion-based systems. More case studies, more worked examples. New material in this second edition includes further application of Computational Fluid Dynamics (CFD), with additional content on flames and burners, costs, efficiencies and future trends.